
Principles of Environmental Restoration

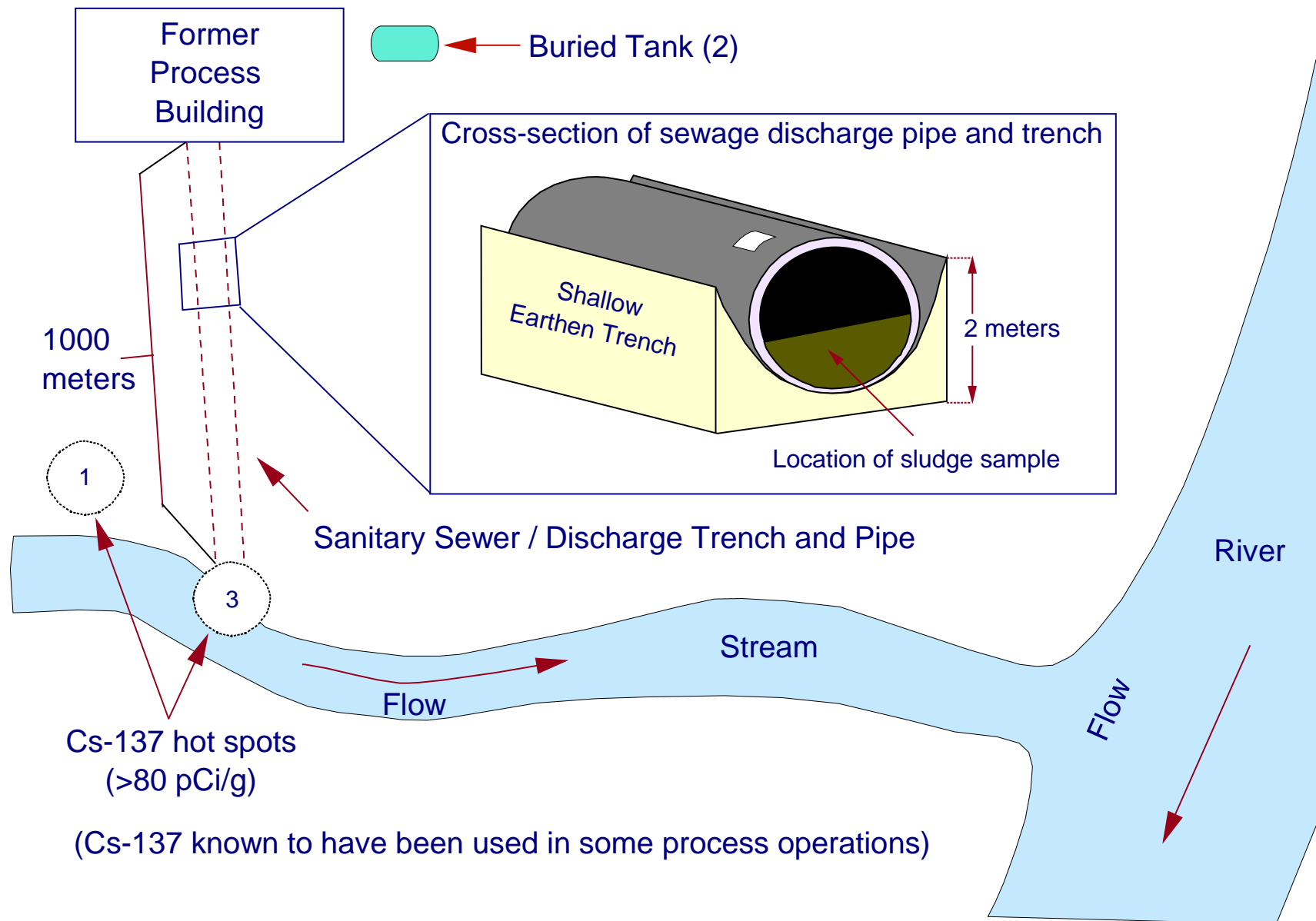
Principle 2 - Problem Identification and Definition

Principle 2

Clear, concise, and accurate problem identification and definition are critical

- Session objectives
 - Explain why accurate problem identification and definition are important
 - Be able to write an environmental restoration problem statement
 - Be able to modify a problem statement as information is received during an investigation and action

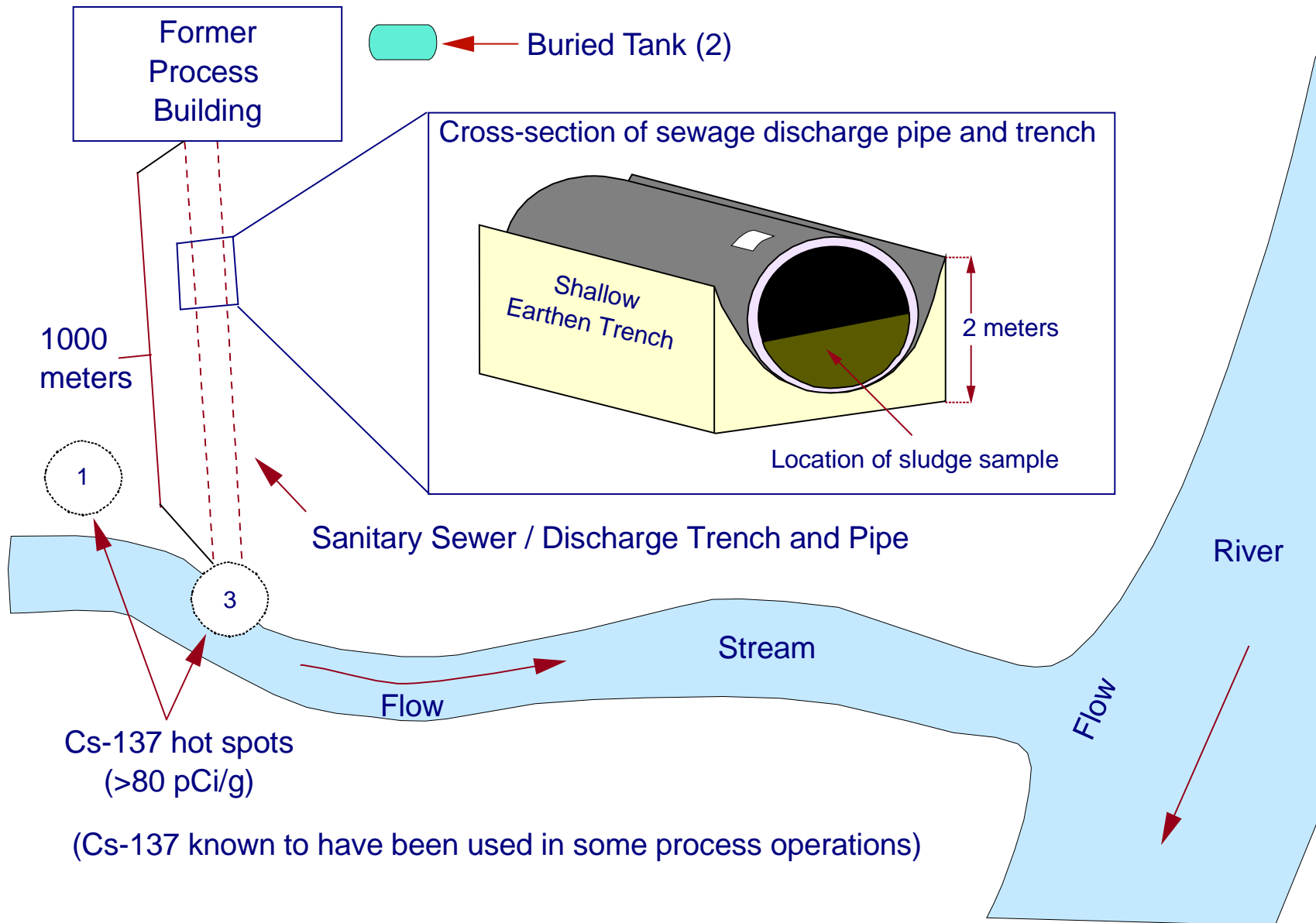
What is the problem(s)?



What is a problem?

- A problem is a site condition posing real or potential unacceptable risk, or a condition that the core team determines requires a response

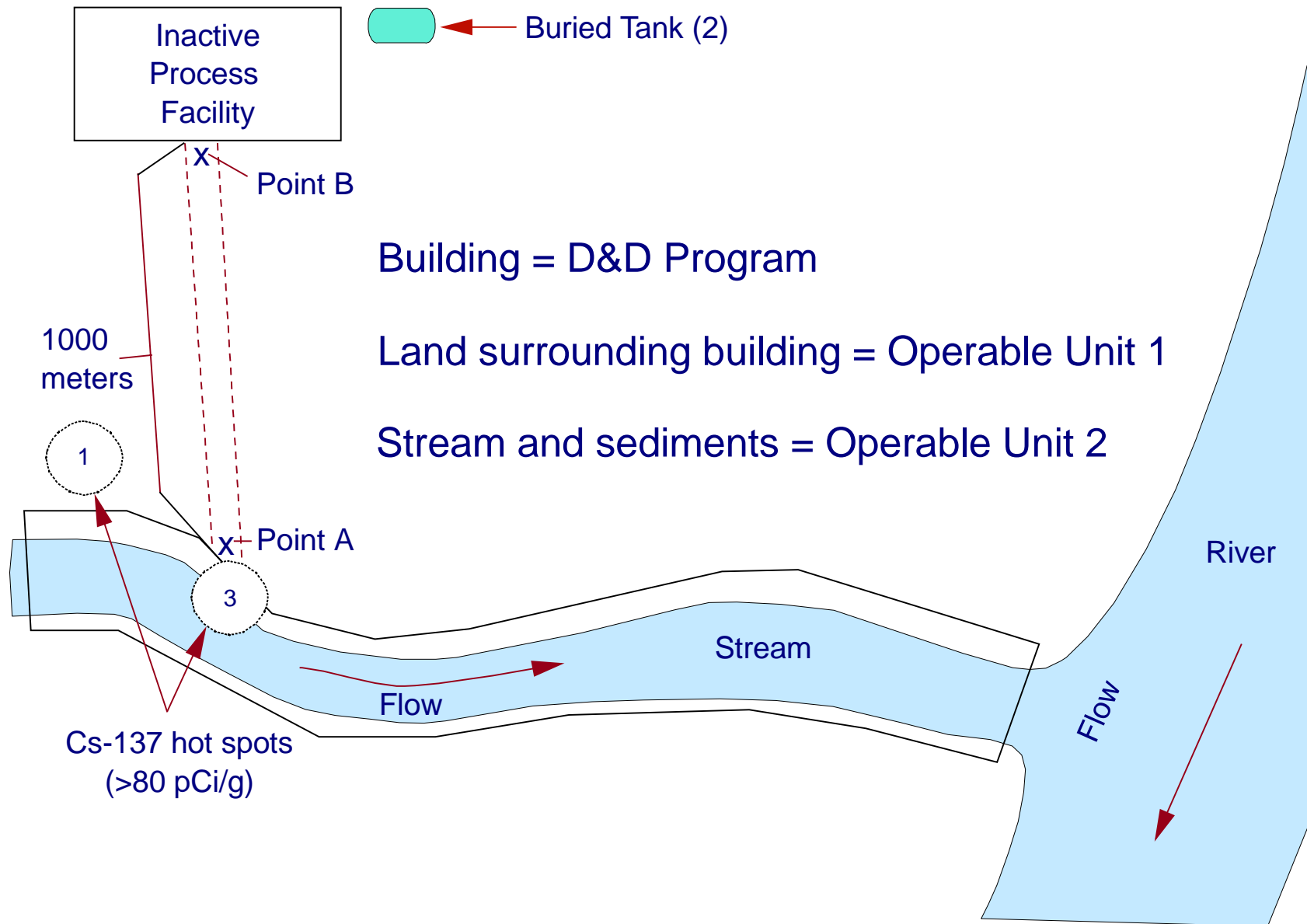
What is the problem(s)?



Why focus on problem definition?

- Problems are what you scope, decide to act on, and ultimately remediate
- The process of defining problems identifies information needs
- Problems are not necessarily operable units, release sites, or waste area groups

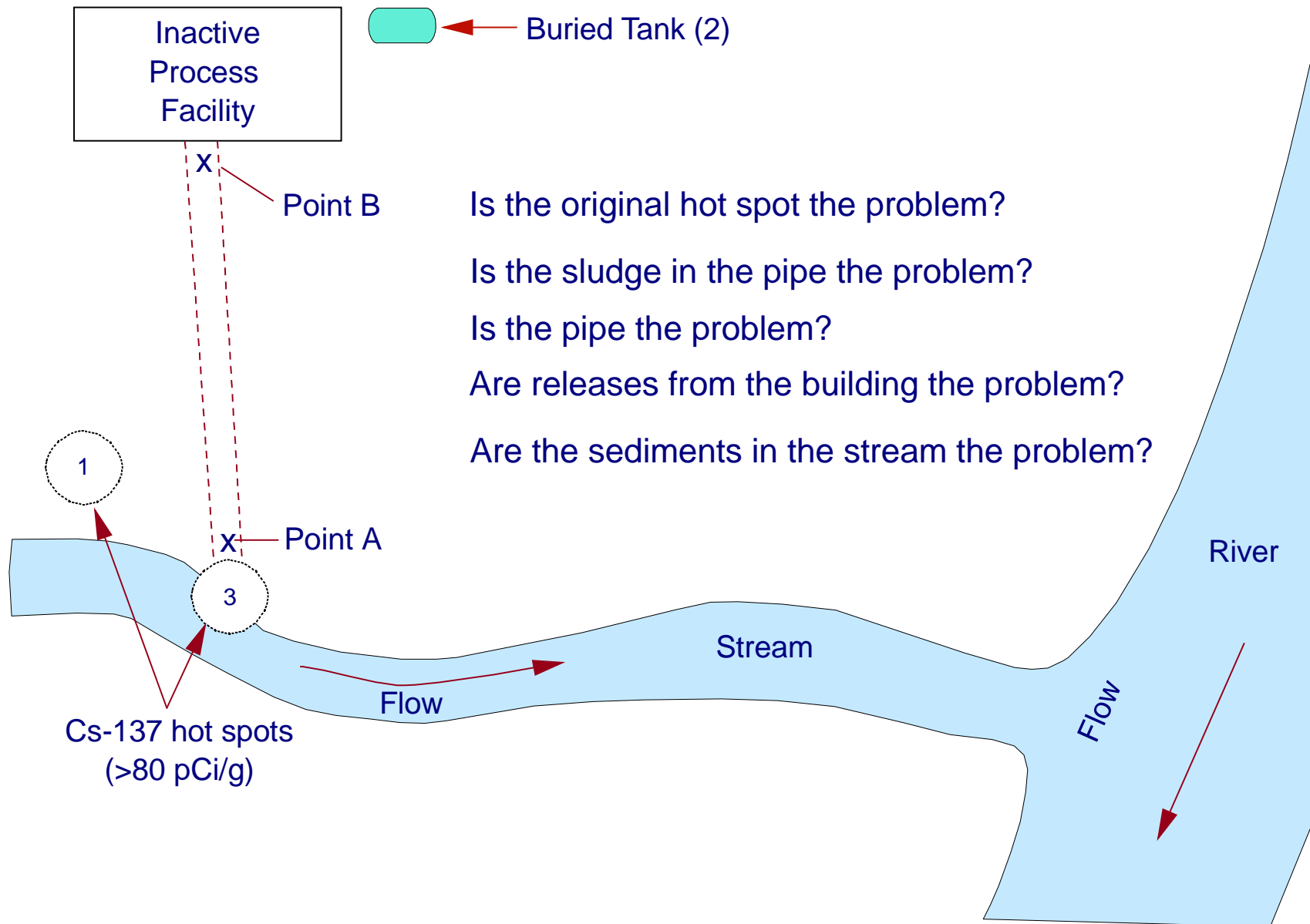
Defining the problem



Poor problem definition leads to:

- Poor project focus
 - Overly extensive or ineffective investigation (e.g., trying to remove all uncertainties)
 - Extended process to decide on remedy
- Poor project execution
 - Not fixing the problem
 - Fixing the wrong problem
 - Fixing the problem at greater cost than needed
- Prolonged site closeout
- Inappropriate exit strategy

Impacts of changing problem definition

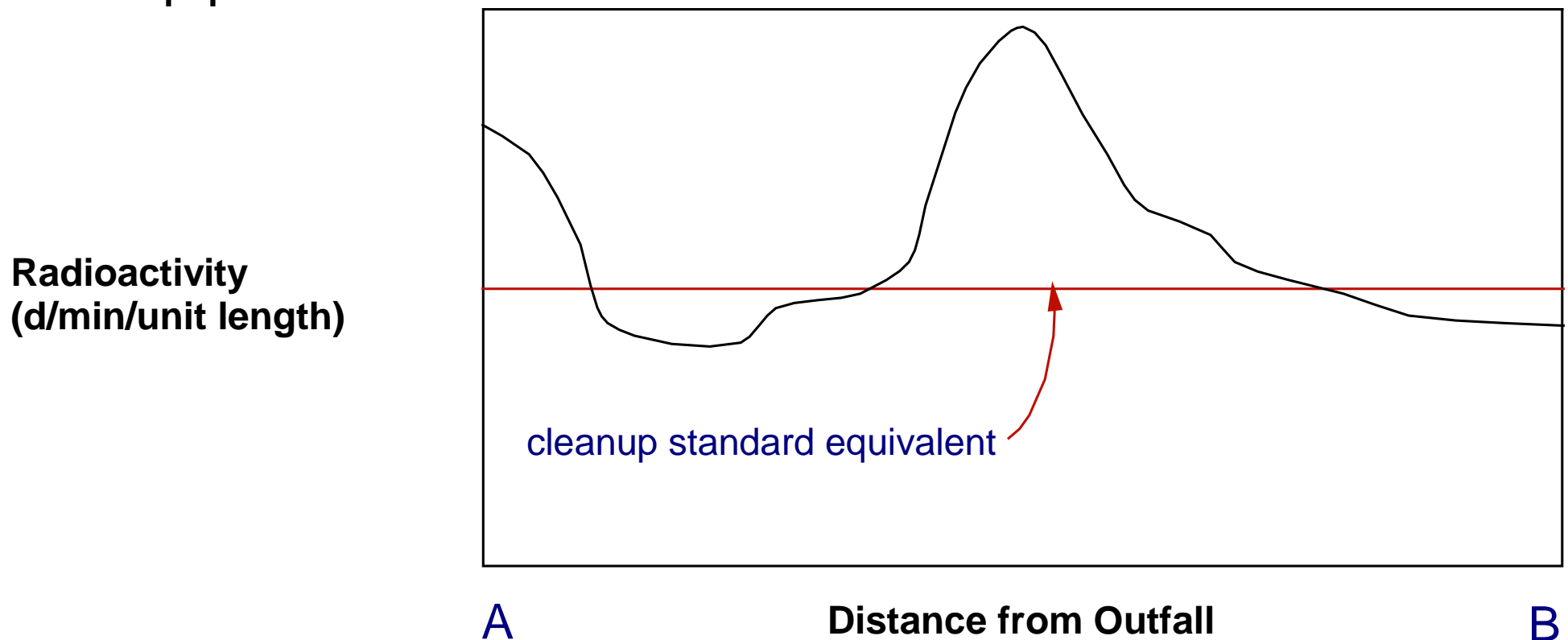


Characteristics of good problem definition:

- Specifies situation requiring response and establishes/clarifies data needs
- Reflects current conceptual site model
 - Modified as information obtained
- Reflects core team consensus
- Helps define data sufficiently
 - Necessary data
 - Sufficient data

Characteristics of good problem definition

- The following graph is based on measurements of radioactivity taken along the exterior, top length of the pipe



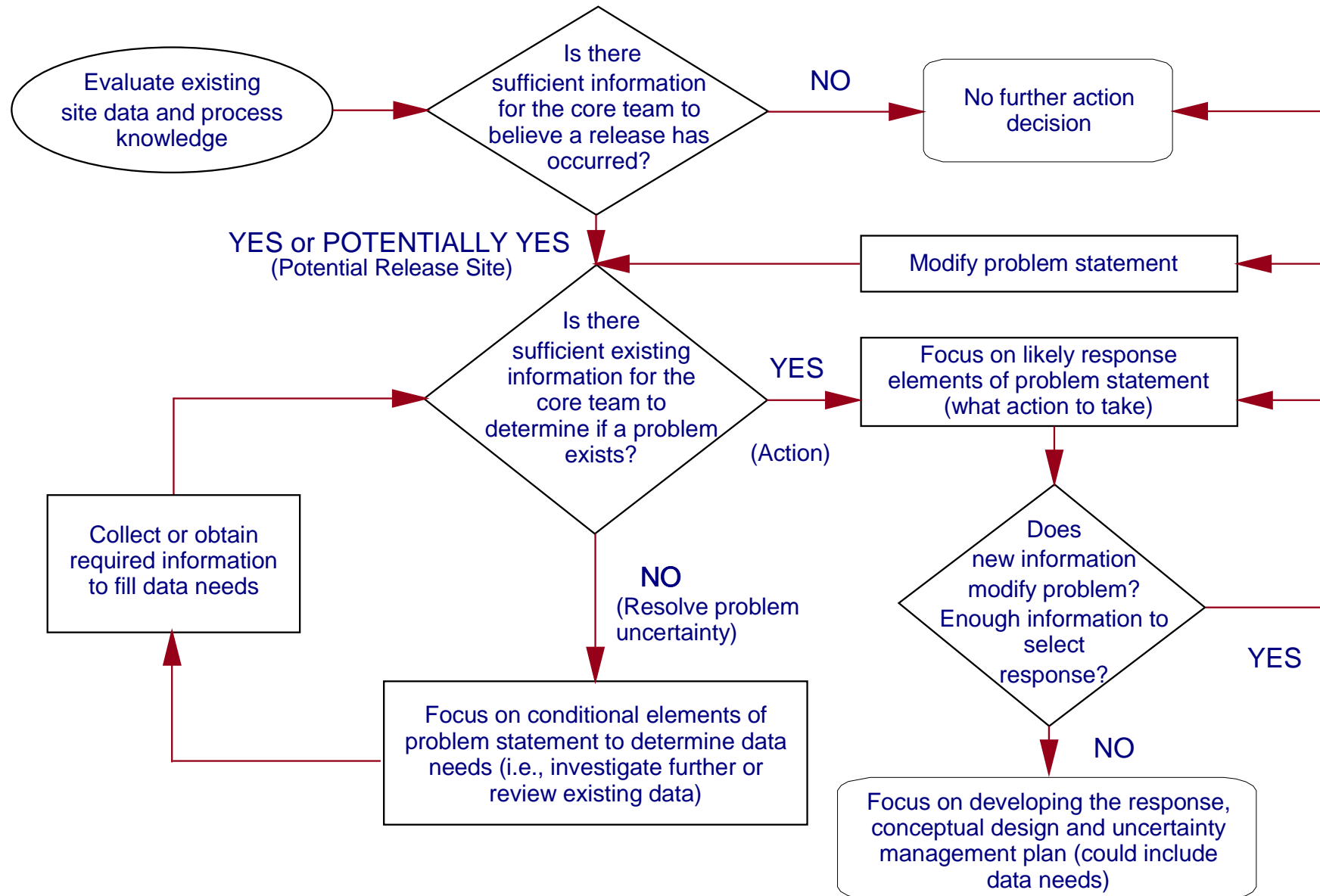
Documenting problems through problem statements

- Problem statements define the circumstances that require a response
- Key components of a problem statement
 - Media
 - Contaminants and concentrations
 - Volumes
 - Regulatory or other drivers

Problem statement examples

- Sitewide - Cesium-137 found above 80 pCi/g of soil in any 100 square foot area 6 inches deep (measured using standard site protocols) and a total estimated volume of contaminated soil less than 100 cubic meters
- Mixed Cesium-137 and D007 contaminated sludge found in an underground tank that is not in compliance with regulatory requirements

Problem identification process



Small group exercise

- Read and follow the directions on the next page
- Take 30 minutes working in your team
- We will report our problem definitions

Now, what is the problem?

